

CLAIMS

1. A method for generating a multiplexed sequence, the method comprising the steps of:
 - receiving at least one basic media data unit sequence;
 - determining modification priorities for a plurality of basic media data blocks out of the received basic media data units;
 - selecting basic media data units to be modified, in response to the modification priority;
 - modifying each of the selected basic media data units to provide corresponding modified basic media data units; wherein a modified selected basic media data unit is smaller than the corresponding selected basic media data unit;
 - replacing selected basic media data units with the corresponding modified basic media data units in response to a comparison between the basic media data units and the corresponding modified basic media data units to provide replacing basic media data units; and
 - multiplexing replacing basic media data units and basic media data units that were not replaced to provide the multiplexed sequence.
2. The method according to claim 1 wherein the comparison involves comparing the qualities of the basic media data unit and the corresponding modified basic media data unit.
3. The method of claim 1 wherein the modification priority of a basic media data unit is responsive to a quality of the basic media data unit.
4. The method of claim 1 wherein the modification priority of a basic media data unit is responsive to a quality degradation of the basic media data unit.
5. The method of claim 1 wherein the modification priority of a basic media data unit is responsive to a compression level of the basic media data unit.

6. The method of claim 1 wherein the modification priority of a basic media data unit is responsive to a dependency of at least one other basic media data unit upon the basic media data unit.

7. The method of claim 1 wherein basic media data units are arranged in groups; wherein the modification priority of a basic media data unit that belongs to a group reflects a combination of parameters of basic media data unit parameter belonging to the groups; wherein each parameter is selected from the list consisting of:

quality;
quality degradation; and
compression level.

8. The method of claim 1 wherein basic media data units are arranged in groups and wherein the comparison involves comparing a combination of qualities of basic media data units belonging to the group and of corresponding basic media data units.

9. The method according to claim 8 wherein the comparison involves comparing the qualities of the basic media data unit and the corresponding modified basic media data unit.

10. The method of claim 8 wherein the modification priority of a basic media data unit is responsive to a quality of the basic media data unit.

11. The method of claim 8 wherein the modification priority of a basic media data unit is responsive to a quality degradation of the basic media data unit.

12. The method of claim 8 wherein the modification priority of a basic media data unit is responsive to a compression level of the basic media data unit.

13. The method of claim 8 wherein the modification priority of a basic media data unit is responsive to a dependency of at least one other basic media data unit upon the basic media data unit.
14. The method of claim 8 wherein the modification priority of a basic media data unit is responsive to at least one parameter selected from the list consisting of:
- a combination of qualities of basic media data units that belong to a same basic media data unit group as the basic media data unit;
 - a combination of quality degradations of basic media data units that belong to a same basic media data unit group as the basic media data unit; and
 - a combination of compression levels of basic media data units that belong to a same basic media data unit group as the basic media data unit.
15. The method according to claim 1 wherein the comparison involves comparing the compression levels of the basic media data unit and the corresponding modified basic media data unit.
16. The method according to claim 15 wherein the comparison involves comparing the qualities of the basic media data unit and the corresponding modified basic media data unit.
17. The method of claim 15 wherein the modification priority of a basic media data unit is responsive to a quality of the basic media data unit.
18. The method of claim 15 wherein the modification priority of a basic media data unit is responsive to a quality degradation of the basic media data unit.
19. The method of claim 15 wherein the modification priority of a basic media data unit is responsive to a compression level of the basic media data unit.

20. The method of claim 15 wherein the modification priority of a basic media data unit is responsive to a dependency of at least one other basic media data unit upon the basic media data unit.

21. The method of claim 15 wherein the modification priority of a basic media data unit is responsive to at least one parameter selected from the list consisting of:

a combination of qualities of basic media data units that belong to a same basic media data unit group as the basic media data unit;

a combination of quality degradations of basic media data units that belong to a same basic media data unit group as the basic media data unit; and

a combination of compression levels of basic media data units that belong to a same basic media data unit group as the basic media data unit.

22. The method of claim 1 wherein basic media data units are arranged in groups and wherein the comparison involves comparing a combination of compression levels of basic media data units belonging to the group and of corresponding basic media data units.

23. The method according to claim 22 wherein the comparison involves comparing the qualities of the basic media data unit and the corresponding modified basic media data unit.

24. The method of claim 22 wherein the modification priority of a basic media data unit is responsive to a quality of the basic media data unit.

25. The method of claim 22 wherein the modification priority of a basic media data unit is responsive to a quality degradation of the basic media data unit.

26. The method of claim 22 wherein the modification priority of a basic media data unit is responsive to a compression level of the basic media data unit.

27. The method of claim 22 wherein the modification priority of a basic media data unit is responsive to a dependency of at least one other basic media data unit upon the basic media data unit.

28. The method of claim 22 wherein the modification priority of a basic media data unit is responsive to at least one parameter selected from the list consisting of:

a combination of qualities of basic media data units that belong to a same basic media data unit group as the basic media data unit;

a combination of quality degradations of basic media data units that belong to a same basic media data unit group as the basic media data unit; and

a combination of compression levels of basic media data units that belong to a same basic media data unit group as the basic media data unit.

29. The method of claim 1 wherein at least some of the basic media data units have temporal difference information representative of temporal differences between basic media data units belonging to the same basic media data unit sequence; and wherein the comparison involves comparing an amount of temporal difference information within the basic media data unit and the corresponding modified basic media data unit.

30. The method according to claim 29 wherein the comparison involves comparing the qualities of the basic media data unit and the corresponding modified basic media data unit.

31. The method of claim 29 wherein the modification priority of a basic media data unit is responsive to a quality of the basic media data unit.

32. The method of claim 29 wherein the modification priority of a basic media data unit is responsive to a quality degradation of the basic media data unit.

33. The method of claim 29 wherein the modification priority of a basic media data unit is responsive to a compression level of the basic media data unit.

34. The method of claim 29 wherein the modification priority of a basic media data unit is responsive to a dependency of at least one other basic media data unit upon the basic media data unit.

35. The method of claim 29 wherein the modification priority of a basic media data unit is responsive to at least one parameter selected from the list consisting of:

a combination of qualities of basic media data units that belong to a same basic media data unit group as the basic media data unit;

a combination of quality degradations of basic media data units that belong to a same basic media data unit group as the basic media data unit; and

a combination of compression levels of basic media data units that belong to a same basic media data unit group as the basic media data unit.

36. The method of claim 1 wherein each sequence of basic media data units is to be provided to a corresponding buffer; wherein the modification priority of each basic media data unit of a sequence is responsive to a simulated status of the corresponding buffer.

37. The method of claim 1 wherein the modification priority is responsive to external modification priority information.

38. The method according to claim 37 wherein the comparison involves comparing the qualities of the basic media data unit and the corresponding modified basic media data unit.

39. The method of claim 37 wherein the modification priority of a basic media data unit is responsive to a quality of the basic media data unit.

40. The method of claim 37 wherein the modification priority of a basic media data unit is responsive to a quality degradation of the basic media data unit.

41. The method of claim 37 wherein the modification priority of a basic media data unit is responsive to a compression level of the basic media data unit.

42. The method of claim 37 wherein the modification priority of a basic media data unit is responsive to a dependency of at least one other basic media data unit upon the basic media data unit.

43. The method of claim 37 wherein the modification priority of a basic media data unit is responsive to a combination of qualities of basic media data units that belong to a same basic media data unit group as the basic media data unit.

44. The method of claim 37 wherein the modification priority of a basic media data unit is responsive to a combination of quality degradations of basic media data units that belong to a same basic media data unit group as the basic media data unit.

45. The method of claim 37 wherein the modification priority of a basic media data unit is responsive to a combination of compression levels of basic media data units that belong to a same basic media data unit group as the basic media data unit.

46. The method of claim 37 wherein at least a portion of the multiplexed sequence is provided to at least one end-user; and wherein the external modification priority information reflects at least one end-user's preference.

47. The method of claim 37 wherein at least a portion of the multiplexed sequence is provided to at least one end-user; and wherein the external modification priority information reflects at least one end-user's profile.

48. The method of claim 37 wherein at least a portion of the multiplexed sequence is provided to at least one end-user; and wherein the external modification priority information reflects at least one end-user's behavior pattern.

49. The method of claim 37 wherein at least a portion of the multiplexed sequence is multiplexed or generated by at least one media provider; and wherein the external modification priority information reflects a parameter selected from the list consisting of:

- at least one media provider's preference; and
- at least one media provider's profile.

50. The method of claim 37 wherein the external modification priority is provided by at least one entity selected from the group consisting of:

- end-user;
- a group of end-users;
- a multiplex generator;
- a basic media data unit provider; and
- a basic media data unit sequences distributor.

51. The method of according to any of claims 1, 8, 15, 22, 29 and 37 wherein the step of selecting is preceded by a step of applying at least one lossless technique for generating the multiplexed sequence such that the amount of selected basic media data unit modifications is reduced.

52. The method according to any of claims 1, 8, 15, 22, 29 and 37 wherein a basic media data unit is selected from the list consisting of:

- a group of pictures;
- a picture;
- a frame;
- a slice;
- a macroblock; and
- a sequence of macroblocks.

53. The method according to any of claims 1, 8, 15, 22, 29 and 37 wherein a basic media data unit comprising signals selected from the list consisting of:

MPEG compliant signals;
original media signals;
JPEG compliant signals;
video signals;
audio signals;
data signals;
H.261 compliant media signals;
H.263 compliant signals;
streaming media signals;
high quality audio signals;
AC-3 audio signals; and
AAC audio signals.

54. The method according to any of claims 1, 8, 15, 22, 29 and 37 further comprising a step of transmitting the multiplexed sequence over a communication channel having an available bandwidth; and
wherein the bandwidth of the multiplexed sequence does not exceed the available bandwidth.

55. The method according to any of claims 1, 8, 15, 22, 29 and 37 further comprising a step of storing the multiplexed sequence at a digital medium having an available storage space and wherein the size of the multiplexed sequence does not exceed the available storage space.

56. A method for generating and transmitting a multiplexed sequence over a communication channel, the communication channel has an available bandwidth, the multiplexed sequence comprising at least one basic media data unit sequence, the method comprising the steps of:
receiving at least one basic media data unit sequence;

determining a modification priority of each basic media data unit of the received at least one basic media data unit sequence;

selecting basic media data units to be modified, in response to the modification priority and to the available bandwidth;

modifying each of the selected basic media data units to provide corresponding modified basic media data units;

replacing selected basic media data units with the corresponding modified basic media data units in response to a comparison between the basic media data units and the corresponding modified basic media data units to provide replacing basic media data units; and

multiplexing replacing basic media data units and basic media data units that were not replaced to provide the multiplexed sequence.

57. The method according to claim 56 wherein the comparison involves comparing the qualities of the basic media data unit and the corresponding modified basic media data unit.

58. The method of claim 56 wherein the modification priority of a basic media data unit is responsive to a quality of the basic media data unit.

59. The method of claim 56 wherein the modification priority of a basic media data unit is responsive to a quality degradation of the basic media data unit.

60. The method of claim 56 wherein the modification priority of a basic media data unit is responsive to a compression level of the basic media data unit.

61. The method of claim 56 wherein the modification priority of a basic media data unit is responsive to a dependency of at least one other basic media data unit upon the basic media data unit.

62. The method of claim 56 wherein basic media data units are arranged in groups; wherein the modification priority of a basic media data unit that belongs

to a group reflects a combination of parameters of basic media data unit parameter belonging to the groups; wherein each parameter is selected from the list consisting of:

- quality;
- quality degradation; and
- compression level.

63. The method of claim 56 wherein basic media data units are arranged in groups and wherein the comparison involves comparing a combination of qualities of basic media data units belonging to the group and of corresponding basic media data units.

64. The method according to claim 63 wherein the comparison involves comparing the qualities of the basic media data unit and the corresponding modified basic media data unit.

65. The method of claim 63 wherein the modification priority of a basic media data unit is responsive to a quality of the basic media data unit.

66. The method of claim 63 wherein the modification priority of a basic media data unit is responsive to a quality degradation of the basic media data unit.

67. The method of claim 63 wherein the modification priority of a basic media data unit is responsive to a compression level of the basic media data unit.

68. The method of claim 63 wherein the modification priority of a basic media data unit is responsive to a dependency of at least one other basic media data unit upon the basic media data unit.

69. The method of claim 63 wherein the modification priority of a basic media data unit is responsive to at least one parameter selected from the list consisting of:

a combination of qualities of basic media data units that belong to a same basic media data unit group as the basic media data unit;

a combination of quality degradations of basic media data units that belong to a same basic media data unit group as the basic media data unit; and

a combination of compression levels of basic media data units that belong to a same basic media data unit group as the basic media data unit.

70. The method according to claim 56 wherein the comparison involves comparing the compression levels of the basic media data unit and the corresponding modified basic media data unit.

71. The method according to claim 70 wherein the comparison involves comparing the qualities of the basic media data unit and the corresponding modified basic media data unit.

72. The method of claim 70 wherein the modification priority of a basic media data unit is responsive to a quality of the basic media data unit.

73. The method of claim 70 wherein the modification priority of a basic media data unit is responsive to a quality degradation of the basic media data unit.

74. The method of claim 70 wherein the modification priority of a basic media data unit is responsive to a compression level of the basic media data unit.

75. The method of claim 70 wherein the modification priority of a basic media data unit is responsive to a dependency of at least one other basic media data unit upon the basic media data unit.

76. The method of claim 70 wherein the modification priority of a basic media data unit is responsive to at least one parameter selected from the list consisting of:

a combination of qualities of basic media data units that belong to a same basic media data unit group as the basic media data unit;

a combination of quality degradations of basic media data units that belong to a same basic media data unit group as the basic media data unit; and

a combination of compression levels of basic media data units that belong to a same basic media data unit group as the basic media data unit.

77. The method of claim 56 wherein basic media data units are arranged in groups and wherein the comparison involves comparing a combination of compression levels of basic media data units belonging to the group and of corresponding basic media data units.

78. The method according to claim 77 wherein the comparison involves comparing the qualities of the basic media data unit and the corresponding modified basic media data unit.

79. The method of claim 77 wherein the modification priority of a basic media data unit is responsive to a quality of the basic media data unit.

80. The method of claim 77 wherein the modification priority of a basic media data unit is responsive to a quality degradation of the basic media data unit.

81. The method of claim 77 wherein the modification priority of a basic media data unit is responsive to a compression level of the basic media data unit.

82. The method of claim 77 wherein the modification priority of a basic media data unit is responsive to a dependency of at least one other basic media data unit upon the basic media data unit.

83. The method of claim 77 wherein the modification priority of a basic media data unit is responsive to at least one parameter selected from the list consisting of:

a combination of qualities of basic media data units that belong to a same basic media data unit group as the basic media data unit;

a combination of quality degradations of basic media data units that belong to a same basic media data unit group as the basic media data unit; and

a combination of compression levels of basic media data units that belong to a same basic media data unit group as the basic media data unit.

84. The method of claim 56 wherein at least some of the basic media data units have temporal difference information representative of temporal differences between basic media data units belonging to the same basic media data unit sequence; and wherein the comparison involves comparing an amount of temporal difference information within the basic media data unit and the corresponding modified basic media data unit.

85. The method according to claim 84 wherein the comparison involves comparing the qualities of the basic media data unit and the corresponding modified basic media data unit.

86. The method of claim 84 wherein the modification priority of a basic media data unit is responsive to a quality of the basic media data unit.

87. The method of claim 84 wherein the modification priority of a basic media data unit is responsive to a quality degradation of the basic media data unit.

88. The method of claim 84 wherein the modification priority of a basic media data unit is responsive to a compression level of the basic media data unit.

89. The method of claim 84 wherein the modification priority of a basic media data unit is responsive to a dependency of at least one other basic media data unit upon the basic media data unit.

90. The method of claim 84 wherein the modification priority of a basic media data unit is responsive to at least one parameter selected from the list consisting of:

a combination of qualities of basic media data units that belong to a same basic media data unit group as the basic media data unit;

a combination of quality degradations of basic media data units that belong to a same basic media data unit group as the basic media data unit; and

a combination of compression levels of basic media data units that belong to a same basic media data unit group as the basic media data unit.

91. The method of claim 56 wherein each sequence of basic media data unit is to be provided to a corresponding buffer; wherein the modification priority of each basic media data unit of a sequence is responsive to a simulated status of the corresponding buffer.

92. The method of claim 56 wherein the modification priority is responsive to external modification priority information.

93. The method according to claim 92 wherein the comparison involves comparing the qualities of the basic media data unit and the corresponding modified basic media data unit.

94. The method of claim 92 wherein the modification priority of a basic media data unit is responsive to a quality of the basic media data unit.

95. The method of claim 92 wherein the modification priority of a basic media data unit is responsive to a quality degradation of the basic media data unit.

96. The method of claim 92 wherein the modification priority of a basic media data unit is responsive to a compression level of the basic media data unit.

97. The method of claim 92 wherein the modification priority of a basic media data unit is responsive to a dependency of at least one other basic media data unit upon the basic media data unit.

98. The method of claim 92 wherein the modification priority of a basic media data unit is responsive to a combination of qualities of basic media data units that belong to a same basic media data unit group as the basic media data unit.

99. The method of claim 92 wherein the modification priority of a basic media data unit is responsive to a combination of quality degradations of basic media data units that belong to a same basic media data unit group as the basic media data unit.

100. The method of claim 92 wherein the modification priority of a basic media data unit is responsive to a combination of compression levels of basic media data units that belong to a same basic media data unit group as the basic media data unit.

101. The method of claim 92 wherein at least a portion of the multiplexed sequence is provided to at least one end-user; and wherein the external modification priority information reflects at least one end-user's preference.

102. The method of claim 92 wherein at least a portion of the multiplexed sequence is provided to at least one end-user; and wherein the external modification priority information reflects at least one end-user's profile.

103. The method of claim 92 wherein at least a portion of the multiplexed sequence is provided to at least one end-user; and wherein the external modification priority information reflects at least one end-user's behavior pattern.

104. The method of claim 92 wherein at least a portion of the multiplexed sequence is multiplexed or generated by at least one media provider; and

wherein the external modification priority information reflects a parameter selected from the list consisting of:

- at least one media provider's preference; and
- at least one media provider's profile.

105. The method of claim 92 wherein the external modification priority is provided by at least one entity selected from the group consisting of:

- end-user;
- a group of end-users;
- a multiplex generator;
- a basic media data unit provider; and
- a basic media data unit sequences distributor.

106. The method of according to any of claims 56, 63, 70, 77, 84 and 92 wherein the step of selecting is preceded by a step of applying at least one lossless technique for generating the multiplexed sequence such that the amount of selected basic media data unit modifications is reduced.

107. The method according to any of claims 56, 63, 70, 77, 84 and 92 wherein a basic media data unit is selected from the list consisting of:

- a group of pictures;
- a picture;
- a frame;
- a slice;
- a macroblock; and
- a sequence of macroblocks.

108. The method according to any of claims 56, 63, 70, 77, 84 and 92 wherein a basic media data unit comprising signals selected from the list consisting of:

- MPEG compliant signals;
- original media signals;
- JPEG compliant signals;

video signals;
audio signals;
data signals;
H.2656 compliant media signals;
H.263 compliant signals;
streaming media signals;
high quality audio signals;
AC-3 audio signals; and
AAC audio signals.

109. The method according to any of claims 56, 63, 70, 77, 84 and 92 further comprising a step of storing the multiplexed sequence at a digital medium having an available storage space and wherein the size of the multiplexed sequence does not exceed the available storage space.

110. A statistical multiplexer for providing a multiplexed sequence including at least one basic media data sequence, the statistical multiplexer comprising:
a control unit;
at least one input, coupled to the control unit, for receiving at least one basic input data unit sequence;
an output, coupled to the control unit and to a communication module, for providing a multiplexed sequence to a communication module; the communication channel has an available bandwidth;
a modification unit, coupled to control unit, to the at least one input and to the output, the modification unit is configured to modify selected basic media data units to provide corresponding basic media data units, in response to control units from the control unit; wherein a modified selected basic media data unit is smaller than the corresponding selected basic media data unit;
wherein the control unit is configured to:
determine modification priorities of a plurality of basic media data units out of the received at least one basic media data unit sequence;

select basic media data units to be modified, in response to the modification priority and to an available bandwidth of the communication module;

control the provision of the selected basic media data units to the modification unit and the generation of corresponding modified basic media data units;

control the replacement of selected basic media data units with the corresponding modified basic media data units in response to a comparison between the basic media data units and the corresponding modified basic media data units to provide replacing basic media data units; and

control the provision of a multiplexed sequence including replacing basic media data units and basic media data units that were not replaced.

111. The statistical multiplexer according to claim 110 wherein the comparison involves comparing the qualities of the basic media data unit and the corresponding modified basic media data unit.

112. The statistical multiplexer according to claim 110 wherein the modification priority of a basic media data unit is responsive to a quality of the basic media data unit.

113. The statistical multiplexer according to claim 110 wherein the modification priority of a basic media data unit is responsive to a quality degradation of the basic media data unit.

114. The statistical multiplexer according to claim 110 wherein the modification priority of a basic media data unit is responsive to a compression level of the basic media data unit.

115. The statistical multiplexer according to claim 110 wherein the modification priority of a basic media data unit is responsive to a dependency of at least one other basic media data unit upon the basic media data unit.

116. The statistical multiplexer according to claim 110 wherein basic media data units are arranged in groups; wherein the modification priority of a basic media data unit that belongs to a group reflects a combination of parameters of basic media data unit parameter belonging to the groups; wherein each parameter is selected from the list consisting of:

- quality;
- quality degradation; and
- compression level.

117. The statistical multiplexer according to claim 110 wherein basic media data units are arranged in groups and wherein the comparison involves comparing a combination of qualities of basic media data units belonging to the group and of corresponding basic media data units.

118. The method according to claim 117 wherein the comparison involves comparing the qualities of the basic media data unit and the corresponding modified basic media data unit.

119. The statistical multiplexer according to claim 117 wherein the modification priority of a basic media data unit is responsive to a quality of the basic media data unit.

120. The statistical multiplexer according to claim 117 wherein the modification priority of a basic media data unit is responsive to a quality degradation of the basic media data unit.

121. The statistical multiplexer according to claim 117 wherein the modification priority of a basic media data unit is responsive to a compression level of the basic media data unit.

122. The statistical multiplexer according to claim 117 wherein the modification priority of a basic media data unit is responsive to a dependency of at least one other basic media data unit upon the basic media data unit.

123. The statistical multiplexer according to claim 117 wherein the modification priority of a basic media data unit is responsive to at least one parameter selected from the list consisting of:

a combination of qualities of basic media data units that belong to a same basic media data unit group as the basic media data unit;

a combination of quality degradations of basic media data units that belong to a same basic media data unit group as the basic media data unit; and

a combination of compression levels of basic media data units that belong to a same basic media data unit group as the basic media data unit.

124. The statistical multiplexer according to claim 110 wherein the comparison involves comparing the compression levels of the basic media data unit and the corresponding modified basic media data unit.

125. The method according to claim 124 wherein the comparison involves comparing the qualities of the basic media data unit and the corresponding modified basic media data unit.

126. The statistical multiplexer according to claim 124 wherein the modification priority of a basic media data unit is responsive to a quality of the basic media data unit.

127. The statistical multiplexer according to claim 124 wherein the modification priority of a basic media data unit is responsive to a quality degradation of the basic media data unit.

128. The statistical multiplexer according to claim 124 wherein the modification priority of a basic media data unit is responsive to a compression level of the basic media data unit.

129. The statistical multiplexer according to claim 124 wherein the modification priority of a basic media data unit is responsive to a dependency of at least one other basic media data unit upon the basic media data unit.

130. The statistical multiplexer according to claim 124 wherein the modification priority of a basic media data unit is responsive to at least one parameter selected from the list consisting of:

a combination of qualities of basic media data units that belong to a same basic media data unit group as the basic media data unit;

a combination of quality degradations of basic media data units that belong to a same basic media data unit group as the basic media data unit; and

a combination of compression levels of basic media data units that belong to a same basic media data unit group as the basic media data unit.

131. The statistical multiplexer according to claim 110 wherein basic media data units are arranged in groups and wherein the comparison involves comparing a combination of compression levels of basic media data units belonging to the group and of corresponding basic media data units.

132. The method according to claim 131 wherein the comparison involves comparing the qualities of the basic media data unit and the corresponding modified basic media data unit.

133. The statistical multiplexer according to claim 131 wherein the modification priority of a basic media data unit is responsive to a quality of the basic media data unit.

134. The statistical multiplexer according to claim 131 wherein the modification priority of a basic media data unit is responsive to a quality degradation of the basic media data unit.

135. The statistical multiplexer according to claim 131 wherein the modification priority of a basic media data unit is responsive to a compression level of the basic media data unit.

136. The statistical multiplexer according to claim 131 wherein the modification priority of a basic media data unit is responsive to a dependency of at least one other basic media data unit upon the basic media data unit.

137. The statistical multiplexer according to claim 131 wherein the modification priority of a basic media data unit is responsive to at least one parameter selected from the list consisting of:

a combination of qualities of basic media data units that belong to a same basic media data unit group as the basic media data unit;

a combination of quality degradations of basic media data units that belong to a same basic media data unit group as the basic media data unit; and

a combination of compression levels of basic media data units that belong to a same basic media data unit group as the basic media data unit.

138. The statistical multiplexer according to claim 110 wherein at least some of the basic media data units have temporal difference information representative of temporal differences between basic media data units belonging to the same basic media data unit sequence; and wherein the comparison involves comparing an amount of temporal difference information within the basic media data unit and the corresponding modified basic media data unit.

139. The method according to claim 138 wherein the comparison involves comparing the qualities of the basic media data unit and the corresponding modified basic media data unit.

140. The statistical multiplexer according to claim 138 wherein the modification priority of a basic media data unit is responsive to a quality of the basic media data unit.

141. The statistical multiplexer according to claim 138 wherein the modification priority of a basic media data unit is responsive to a quality degradation of the basic media data unit.

142. The statistical multiplexer according to claim 138 wherein the modification priority of a basic media data unit is responsive to a compression level of the basic media data unit.

143. The statistical multiplexer according to claim 138 wherein the modification priority of a basic media data unit is responsive to a dependency of at least one other basic media data unit upon the basic media data unit.

144. The statistical multiplexer according to claim 138 wherein the modification priority of a basic media data unit is responsive to at least one parameter selected from the list consisting of:

- a combination of qualities of basic media data units that belong to a same basic media data unit group as the basic media data unit;

- a combination of quality degradations of basic media data units that belong to a same basic media data unit group as the basic media data unit; and

- a combination of compression levels of basic media data units that belong to a same basic media data unit group as the basic media data unit.

145. The statistical multiplexer according to claim 110 wherein each sequence of basic media data unit is to be provided to a corresponding buffer; wherein the modification priority of each basic media data unit of a sequence is responsive to a simulated status of the corresponding buffer.

146. The statistical multiplexer according to claim 110 wherein the modification priority is responsive to external modification priority information.

147. The method according to claim 146 wherein the comparison involves comparing the qualities of the basic media data unit and the corresponding modified basic media data unit.

148. The statistical multiplexer according to claim 146 wherein the modification priority of a basic media data unit is responsive to a quality of the basic media data unit.

149. The statistical multiplexer according to claim 146 wherein the modification priority of a basic media data unit is responsive to a quality degradation of the basic media data unit.

150. The statistical multiplexer according to claim 146 wherein the modification priority of a basic media data unit is responsive to a compression level of the basic media data unit.

151. The statistical multiplexer according to claim 146 wherein the modification priority of a basic media data unit is responsive to a dependency of at least one other basic media data unit upon the basic media data unit.

152. The statistical multiplexer according to claim 146 wherein the modification priority of a basic media data unit is responsive to a combination of qualities of basic media data units that belong to a same basic media data unit group as the basic media data unit.

153. The statistical multiplexer according to claim 146 wherein the modification priority of a basic media data unit is responsive to a combination of quality degradations of basic media data units that belong to a same basic media data unit group as the basic media data unit.

154. The statistical multiplexer according to claim 146 wherein the modification priority of a basic media data unit is responsive to a combination of compression levels of basic media data units that belong to a same basic media data unit group as the basic media data unit.

155. The statistical multiplexer according to claim 146 wherein at least a portion of the multiplexed sequence is provided to at least one end-user; and wherein the external modification priority information reflects at least one end-user's preference.

156. The statistical multiplexer according to claim 146 wherein at least a portion of the multiplexed sequence is provided to at least one end-user; and wherein the external modification priority information reflects at least one end-user's profile.

157. The statistical multiplexer according to claim 146 wherein at least a portion of the multiplexed sequence is provided to at least one end-user; and wherein the external modification priority information reflects at least one end-user's behavior pattern.

158. The statistical multiplexer according to claim 146 wherein at least a portion of the multiplexed sequence is multiplexed or generated by at least one media provider; and

wherein the external modification priority information reflects a parameter selected from the list consisting of:

- at least one media provider's preference; and
- at least one media provider's profile.

159. The statistical multiplexer according to claim 146 wherein the external modification priority is provided by at least one entity selected from the group consisting of:

end-user;
a group of end-users;
a multiplex generator;
a basic media data unit provider; and
a basic media data unit sequences distributor.

160. The statistical multiplexer of according to any of claims 110, 117, 124, 131, 138 and 146 wherein the step of selecting is preceded by a step of applying at least one lossless technique for generating the multiplexed sequence such that the amount of selected basic media data unit modifications is reduced.

161. The statistical multiplexer according to any of claims 110, 117, 124, 131, 138 and 146 wherein a basic media data unit is selected from the list consisting of:

a group of pictures;
a picture;
a frame;
a slice;
a macroblock; and
a sequence of macroblocks.

162. The statistical multiplexer according to any of claims 110, 117, 124, 131, 138 and 146 wherein a basic media data unit comprising signals selected from the list consisting of:

MPEG compliant signals;
original media signals;
JPEG compliant signals;
video signals;
audio signals;
data signals;
H.26110 compliant media signals;
H.2117 compliant signals;

streaming media signals;
high quality audio signals;
AC-3 audio signals; and
AAC audio signals.

163. The method according to any of claims 1, 8, 15, 22, 29, 37, 56, 63, 70, 77, 84 and 92 wherein the step of determination a modification priority involves applying a modification priority function; and wherein the modification priority function is responsive to at least one characteristic of at least one of the received basic media data unit.

164. The method according to any of claims 1, 8, 15, 22, 29, 37, 56, 63, 70, 77, 84 and 92 wherein the step of determination a modification priority involves applying a modification priority function; and wherein the modification priority function is responsive to at least one characteristic of at least one of the received basic media data unit, the at least one characteristic is selected from the group consisting of: quality; quality degradation; and compression level.

165. The method according to any of claims 1, 8, 15, 22, 29, 37, 56, 63, 70, 77, 84 and 92 wherein the step of determination a modification priority involves applying a modification priority function; and wherein the modification priority function is responsive to at least one parameter selected from the group consisting of:

- amount of received basic media data units;
- amount of basic media data units belonging to predefined basic media data unit sequences;
- reception rate of received basic media data units;
- reception rate of basic media data units belonging to predefined basic media data sequences; and
- the identity of received basic media data unit sequences.

166. The method according to any of claims 1, 8, 15, 22, 29, 37, 56, 63, 70, 77, 84 and 92 wherein the comparison involves applying a comparison function; and wherein the comparison function is responsive to at least one characteristic of at least one of the received basic media data unit.

167. The method according to any of claims 1, 8, 15, 22, 29, 37, 56, 63, 70, 77, 84 and 92 wherein the comparison involves applying a comparison function; and wherein the comparison function is responsive to at least one characteristic of at least one of the received basic media data unit, the at least one characteristic is selected from the group consisting of: quality; quality degradation; and compression level.

168. The method according to any of claims 1, 8, 15, 22, 29, 37, 56, 63, 70, 77, 84 and 92 wherein the comparison involves applying a comparison function; and wherein the comparison function is responsive to at least one parameter selected from the group consisting of:

- amount of received basic media data units;

- amount of basic media data units belonging to predefined basic media data unit sequences;

- reception rate of received basic media data units;

- reception rate of basic media data units belonging to predefined basic media data sequences; and

- the identity of received basic media data unit sequences.